What is claimed is:

1. A method, comprising:

storing a first data structure containing costs associated with transmitting data between routers in a network;

combining the first data structure with itself to determine a cost of transmitting the data; and

transmitting the data along a route based on the calculated cost.

2. The method of claim 1, further comprising storing a second data structure defining router connections in the network.

3. The method of claim 2, wherein storing the second data structure comprises storing a matrix defining router connections.

4. The method of claim 3, wherein storing the first data structure comprises storing a matrix, wherein the costs are based on at least one of a distance, reliability, security, or expense of transmitting the data between routers in the network.

5. The method of claim 4, wherein combining the first data structure with itself calculates the cost of transmitting the data between a source router and destination router in the network for a given number of steps at minimal cost.

6. The method of claim 5, wherein the transmitting the data along the route further comprises determining the route between the source router and the destination router based on the cost and the connection matrix.

7. The method of claim 2, further including determining the second data structure.

8. The method of claim 1, wherein transmitting the data comprises transmitting an IP data packet.

9. The method of claim 1, further including determining the first data structure.

10. An apparatus, comprising:

an interface adapted to receive a data packet;

at least one storage device to store:

a first data structure defining router connections in a network; and

a second data structure that defines a cost associated with links between routers in the network; and

a controller adapted to:

combine the second data structure with itself at least once to determine a cost for transmitting the data packet; and

determine a route based on the first data structure and the calculated cost for transmitting the data packet.

11. The apparatus of claim 10, wherein the first data structure comprises a first matrix that defines the router connections in the network wherein the router connections comprise adjacent router connections.

12. The apparatus of claim 11, wherein the second data structure comprises a second matrix that defines the cost associated with each link between adjacent routers as exponents.

13. The apparatus of claim 12, wherein the cost of each link between a router and itself is defined as zero and the cost for each link from a router to a non-adjacent router is defined as infinity.

14. The apparatus of claim 13, wherein the controller is adapted to combine the second matrix using the formula $\min_{1 \text{ to } k} (D_{ik} * D_{kj})$, wherein k is the number of the routers and the second matrix is represented by D that has i rows and j columns.

15. The apparatus of claim 14, wherein the controller is adapted to increment k if a resulting element from combining the second matrix is one.

16. The apparatus of claim 12, wherein the costs are based on at least one of a distance, reliability, security, or expense of transmitting the data packet between the adjacent routers in the network.

17. The apparatus of claim 12, wherein the controller is further adapted to combine the second matrix with itself a number of times until the cost of transmitting the data packet between a source router and destination router is minimum for a given number of steps.

18. The apparatus of claim 10, wherein the controller is adapted to determine a direct connection between each link of the route based on the first data structure.

19. The apparatus of claim 10, wherein the controller is further adapted to transmit the data packet along the route.

20. The apparatus of claim 10, wherein the data packet is an IP data packet.

21. An article comprising at least one machine-readable storage media containing instructions for routing a data packet, the instructions when executed causing a controller to:

represent node connections in a network in a first matrix;

represent costs of transmitting the data packet between each of a plurality of nodes in a second matrix; and

determine a route to transmit the data packet based on the first matrix and the second matrix.

22. The article of claim 21, wherein the instructions when executed cause the processor to transmit the data packet over the route.

23. The article of claim 21, wherein the instructions when executed cause the processor to represent adjacent node connections in the first matrix.

24. The article of claim 21, wherein the instructions when executed cause the processor to represent the costs as exponents in the second matrix.

25. The article of claim 24, wherein the instructions when executed cause the processor to represent a cost between each node and itself as zero and each node to a non-adjacent node as infinity.

26. The article of claim 25, wherein the instructions when executed cause the processor to combine the second matrix using the formula $\min_{1 \text{ to } k} (D_{ik} * D_{kj})$, wherein k is the number of the routers and the second matrix is represented by D that has i rows and j columns.

27. The apparatus of claim 26, wherein the instructions when executed cause the processor to increment k if a resulting element from combining the second matrix is one.

28. The article of claim 21, wherein the instructions when executed cause the processor to represent the costs comprises the processor to represent at least one of a distance, reliability, security, or expense of transmitting the data packet between each of the plurality of nodes.

29. The article of claim 21, wherein the instructions when executed cause the processor to combine the second matrix with itself a number of times until the costs of transmitting the data packet between a source node and destination node are minimum for a given number of steps.

30. The article of claim 21, wherein the instructions when executed cause the processor to determine the route to transmit an IP data packet.

31. A data signal embodied in a carrier wave comprising instructions for routing data packet to at least one of a plurality of network entities, the instructions when executed causing a controller to:

store a connection matrix indicating adjacent nodes in a network;

store a cost matrix expressing transmission costs as exponents; and

determine a route for transmitting the data packet based on the connection and cost matrices from a first node to a second node.

32. The data signal of claim 31, wherein the instructions when executed cause the processor to transmit the packet data over the route.

33. A communication system, comprising:

a source entity adapted to transmit a data packet;

a router capable of receiving the data packet, the router adapted to:

define a cost matrix containing transmission costs associated with routing the data packet between a pair of routers in a network;

determine a transmission cost of transmitting the packet data to a destination entity based on the cost matrix; and

transmit the data packet to the destination entity using a route associated with the transmission cost.

34. The communications system of claim 33, wherein the data packet is an IP data packet.